

WHAT IS CLAIMED IS:

1. A polishing pad for chemical-mechanical polishing comprising a porous foam having a multi-modal pore size distribution, wherein the multi-modal distribution has about 20 or fewer pore size maxima.
2. The polishing pad of claim 1, wherein the multi-modal pore size distribution is a bimodal pore size distribution.
3. The polishing pad of claim 2, wherein the bimodal distribution has a first pore size maximum of about 50 μm or less and a second pore size maximum at about 50 μm or more.
4. The polishing pad of claim 2, wherein the bimodal distribution has a first pore size maximum at about 20 μm or less and a second pore size maximum at about 20 μm or more.
5. The polishing pad of claim 1, wherein the porous foam comprises a polymer resin selected from the group consisting of thermoplastic elastomers, thermoplastic polyurethanes, polyolefins, polycarbonates, polyvinylalcohols, nylons, elastomeric rubbers, styrenic polymers, polyaromatics, fluoropolymers, polyimides, cross-linked polyurethanes, cross-linked polyolefins, polyethers, polyesters, polyacrylates, elastomeric polyethylenes, polytetrafluoroethylenes, polyethyleneteraphthalates, polyimides, polyaramides, polyarylenes, polystyrenes, polymethylmethacrylates, copolymers and block copolymers thereof, and mixtures and blends thereof.
6. The polishing pad of claim 5, wherein the polymer resin is a thermoplastic polyurethane.
7. The polishing pad of claim 6, wherein the thermoplastic polyurethane has a Melt Index of about 20 or less, a weight average molecular weight (M_w) of about 50,000 g/mol to about 300,000 g/mol, and a polydispersity index (PDI) of about 1.1 to about 6.
8. The polishing pad of claim 6, wherein the thermoplastic polyurethane has a Rheology Processing Index (RPI) of about 2 to about 8 at a shear rate (γ) of about 150 l/s and a temperature of about 205 °C.

9. The polishing pad of claim 6, wherein the thermoplastic polyurethane has a Flexural Modulus of about 350 MPa to about 1000 MPa.

10. The polishing pad of claim 6, wherein the thermoplastic polyurethane has a glass transition temperature of about 20 °C to about 110 °C and a melt transition temperature of about 120 °C to about 250 °C.

11. The polishing pad of claim 1, wherein the porous foam comprises a water-absorbent polymer.

12. The polishing pad of claim 11, wherein the water-absorbent polymer is selected from the group consisting of cross-linked polyacrylamide, cross-linked polyacrylic acid, cross-linked polyvinyl alcohol, and combinations thereof.

13. The polishing pad of claim 1, wherein the porous foam comprises particles selected from the group consisting of abrasive particles, polymer particles, composite particles, liquid carrier-soluble particles, and combinations thereof.

14. The polishing pad of claim 13, wherein the porous foam further comprises abrasive particles selected from the group consisting of silica, alumina, ceria, and combinations thereof.

15. The polishing pad of claim 1, wherein the porous foam has a void volume of about 25% or less.

16. The polishing pad of claim 1, wherein the porous foam comprises closed cells.